

## New and Improved State Voluntary Remediation Tax Credit

Indiana taxpayers that would like to remediate an Indiana brownfields site may be eligible to receive financial assistance. Help may be available through what is called the Voluntary Remediation Tax Credit (VRTC), a brownfields redevelopment tool administered by the Indiana Development Finance Authority (IDFA), in cooperation with the Indiana Department of Environmental Management.

The new and improved VRTC is available to any taxpayer that meets the statutory eligibility requirements (effective as of January 1,

2004) and is subject to one or more of the following Indiana taxes: the state gross retail and use tax, the adjusted gross income tax, the financial institutions tax, and the insurance premiums tax. Eligible remediation projects may, but are no longer required to, enter the IDEM Voluntary Remediation Program (VRP) to receive the tax credit.

VRTC applications are accepted on a rolling basis, but the credits are awarded in chronological order starting in the tax year that the remediation is completed. VRTC appli-

cants are encouraged to discuss their prospective projects with IDFA prior to applying.

The VRTC amount provided will be the lesser of 10% of the total cost of the remediation or \$100,000. The costs identified during the final state certification of the project (by IDEM and IDFA) must be consistent with the remediation cost estimates that are submitted and approved by IDFA and IDEM in the application process. For more information about this opportunity, please refer to IDFA's Web page at [www.idfabrownfields.com](http://www.idfabrownfields.com).

## Vapor Intrusion & Brownfield Sites

Vapor intrusion is the movement of contaminant vapors, typically located in subsurface soil or ground water, into a building. Contaminant sources can be from man-made sources, such as chemical leaks or spills, or can be naturally occurring, such as radon gas. Although vapor intrusion is not an issue at every brownfields project, it can be a significant concern for sites where pesticides, volatile organic compounds (VOCs), or semivolatile organic compounds (SVOCs) were used or disposed.

Depending on the results of a site investigation and the eventual reuse of the property, a vapor intrusion assessment may need to be considered where such contamination has the potential to impact indoor air quality, on or off-site.

### Common Contaminants of Concern

Some common site contaminants that readily volatilize and have indoor air health risks at low contaminant concentrations include trichloroethylene (TCE), tetrachloroethylene

(PCE or PERC), and benzene. TCE has historically been utilized as a degreaser solvent, but is also found in spot removers, typewriter correction fluid, adhesives, and paint removers. PCE was also used as a degreaser and is the principal chemical used in most laundry drycleaning. Benzene is a component in gasoline, but is also used in the manufacture of some plastics, detergents, drugs, and pesticides.

Other contaminants that are not as volatile, but still could be a concern at low indoor air concentrations include pesticides, polychlorinated biphenyls (PCBs), mercury, and selected SVOCs found in diesel and fuel oil.

### Vapor Pathways

In buildings, air exchange between the interior and exterior environments takes place by the process of infiltration, by natural ventilation through open windows and doors, and by mechanical ventilation systems. Infiltration is the movement of air through gaps in closed windows, cracks in the building walls or foundation, or through chimneys. Infiltration and



natural ventilation are caused by pressure gradients between indoor and outdoor air, or between indoor air and vapors in the soil (soil gas). The operation of ventilation/heating systems can cause negative pressure that pulls air from the subsurface into the building, or can cause positive pressure that minimizes fresh outside air infiltration.

Modern structures are designed to limit the exchange of air with the outside environment to minimize heating and cooling costs and reduce exterior noise levels. However, a consequence of tight building design may be the interior accumulation of vapors from many sources, including via vapor intrusion.

*(continued on page 2)*

## Vapor Intrusion

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### **Potential for Vapor Intrusion**

The potential for vapor intrusion is site-variable and dependant upon contaminant type, concentration, depth, and location, as well as soil and ground water characteristics, the presence of preferential vapor pathways, and building/landfill construction. Vapor intrusion concerns are greatest at properties with newer construction where significant concentrations of contaminants are present in permeable flooring, dry subsurface soils/fill, or in a shallow ground water table.

In extreme cases, vapors may accumulate in dwellings or occupied buildings to levels that may pose near-term safety hazards (e.g., explosion), acute health effects, or aesthetic problems (e.g., odors). Typically, however, chemical concentration levels are low enough that vapors may be present below detectable odor threshold concentrations. In buildings with low concentrations, the main concern is whether the chemicals may pose an unacceptable risk of chronic health effects due to long-term exposure at low levels.

Vapor intrusion concerns are not necessarily restricted to commercial or industrial sites. Redeveloped abandoned dumps and landfills also need to be evaluated for vapor sources, vapor pathways, and the potential for vapor intrusion into on-site and nearby off-site structures. Although disposed hazardous wastes can be present at landfills and dumps and may be a cause for concern, vapor intrusion assessments must also consider methane generated from the breakdown of waste vegetative matter.

### **Indoor Air Assessment Considerations**

At the very low laboratory detection limits that are required to assess health risk for certain contaminants, analytical costs for indoor air sampling can exceed \$1,000 per sample. Additionally, air sampling results can be complicated by factors other than intrusion, such as vapors originating from other manmade and natural sources, including:

- combustion products from oil, coal, wood, and natural gas stoves and heaters;
- off-gassing of building materials and furnishings, such as plywood, fiberglass, foam board insulation, paints, carpets,

and furniture cushion foam;

- household products, such as solvents (cleaners) and glues;
- lifestyle, such as the use of cigarettes/cigars/pipes, mothballs, indoor pesticides, and drycleaning; and
- internal contaminants, such as mold spores.

For existing structures where vapor intrusion and/or interior vapors are a concern, it is often more cost effective to retrofit the building with a vapor mitigation system than to conduct extensive indoor air sampling to determine contaminant concentrations that would then require mitigation anyway.

### **Cost-effective Mitigation**

Depending on the results of a site investigation and the potential for vapor intrusion, mitigation may be required to reduce or eliminate the vapor source or potential exposure pathway, or lower the concentrations of vapors within a structure. In some cases, relatively simple and extremely cost-effective techniques have been shown to eliminate the problem or decrease vapor concentrations to below levels of concern.

Strategies for mitigating vapor intrusion involve both passive and active techniques. Passive techniques can include the selective placement of buildings on a site to avoid areas of significant contamination, or deed restrictions (institutional controls) that limit proposed site uses.

If passive techniques are insufficient to adequately limit exposure, then more active techniques may be used to prevent the entry of contaminant vapors into a building. When possible, active mitigation strategies should be considered in the engineering design and planning phases of a site redevelopment to minimize costs. Up-front capital costs for active systems appropriately designed into new building construction or old building rehabilitation often are substantially less than subsequently retrofitting a building once construction is complete.

Active vapor mitigation systems can include one or more of the following components:

- radon mitigation-style, sub-slab depres-

surization systems;

- sealing of the building and the installation of a vapor barrier (when used in conjunction with other methods);
- modification of the building foundation;
- soil vapor extraction;
- indoor air purifiers or adsorption systems such as carbon filtration;
- measures to increase natural ventilation such as opening windows and doors; and
- adjustments to building heating, ventilation, and air conditioning (HVAC) systems that alter the low air exchange rates or high sustained indoor/outdoor pressure differences.

For more information on investigating the potential for vapor intrusion, vapor mitigation, and the health effects of contaminants, please refer to:

- OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Ground Water and Soils [www.epa.gov/correctiveaction/eis/vapor.htm](http://www.epa.gov/correctiveaction/eis/vapor.htm)
- Agency for Toxic Substances and Disease Registry [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov)
- "A Citizen's Guide to Radon: The Guide to Protecting Yourself and Your Family From Radon (4th ed.)", EPA Document 402-K02-006, Revised May 2002
- Building Radon Out: A Step-by-Step Guide on How to Build Radon Resistant Homes, U.S. Environmental Protection Agency, Office of Air & Radiation, EPA/402-K-1-002, April 2001

## Mark Your Calendars!

■ **SAGI Phase I  
Grant Round  
Deadline - May 1**



■ **National  
Brownfields  
Conference 2004  
Sept. 20-22  
St. Louis, MO**

## In Brief

### IDOC EZ Brownfield Grant Program 2003 Grant Round Recipients

The Indiana Department of Commerce (IDOC) awarded its Enterprise Zone (EZ) Brownfield Grant funding to four Urban Enterprise Associations (UEAs) in 2003. The Evansville UEA was awarded \$1,500 for Phase I environmental assessment activities at the Tri-State Resource Recovery Center. The Lafayette UEA will also have Phase I activities conducted at the Grace Property & Madison LLC with \$2,700 in grant funding. For the Studebaker Area C-Oliver Plow Works project, the South Bend UEA received \$34,887 for Phase II site assessment activities. The Jeffersonville UEA received \$10,175 for Phase II environmental assessment activities at the Jeffersonville Gateway Properties redevelopment project. For more information about future grant rounds, please contact Deanna Oware of IDOC at (317) 232-8917.

- *Partnership/Leadership*: Elkhart County's Horizon Project
- *Stewardship*: Red Mill County Park Acquisition and Development, LaPorte County
- *Economic Development*: Wabash Landing Redevelopment in West Lafayette, Tippecanoe County
- *Community Sense of Place*: Starr-Gennett/Whitewater Valley Gorge Brownfields Redevelopment Project in Richmond, Wayne County
- *Community Involvement*: Porter County's Land Use and Thoroughfare Plan
- *Data and Technology*: Land Use in Central Indiana (LUCI) Model, Central Indiana
- *Data and Technology (Small Jurisdiction)*: Upland's Interactive Mapping Project, Grant County

For more information about these projects or ILUC, please contact Jamie Palmer at [jlpalmer@iupui.edu](mailto:jlpalmer@iupui.edu) or (317) 261-3046.

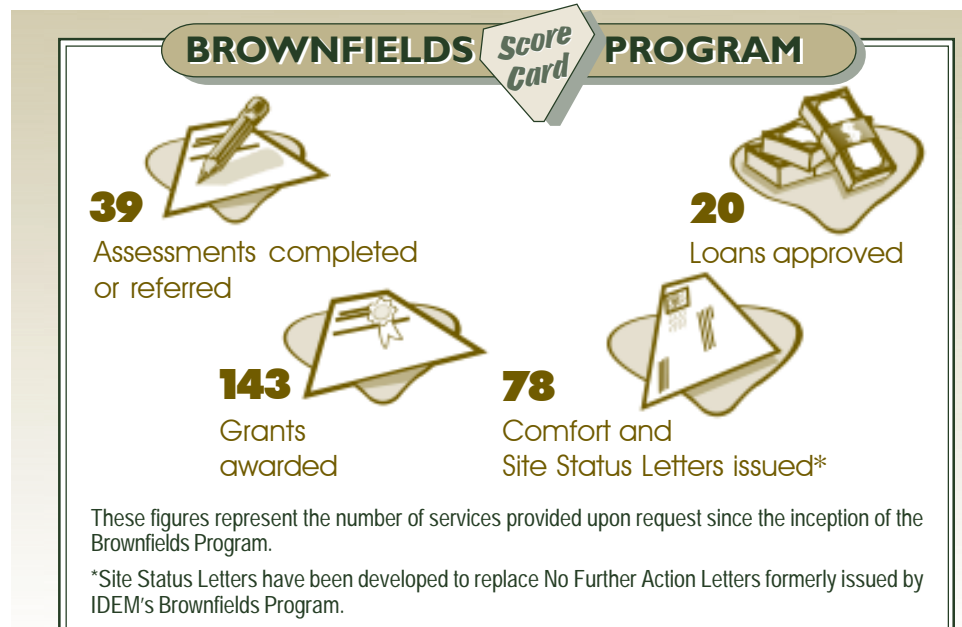
### November 2003 SAGI Phase I Grant Round Awards

In December 2003, the following three communities were awarded Indiana Brownfields Site Assessment Grant Incentive (SAGI) grants available through the Environmental Remediation Revolving Loan Fund. The decision to award funding for this competitive grant round was a cooperative effort by the Indiana Development Finance Authority (IDFA) and IDEM. This grant round, for Phase I site assessment activities only, was the first round that reflected changes to the SAGI guidelines. For more information about SAGI and the application process, please visit [www.idfabrownfields.com](http://www.idfabrownfields.com).

|   |                 |
|---|-----------------|
| ◆ Cass County<br>(William H. Pfarrer Plating Co.) | \$3,450         |
| ◆ City of Marion<br>(Former Indiana Copper Corp.) | \$3,800         |
| ◆ City of Wabash<br>(Kozy Korner)                 | \$3,494         |
| <b>TOTAL</b>                                      | <b>\$10,744</b> |

### Brownfield Projects Recognized by Indiana Land Use Consortium

The Starr-Gennett/Whitewater Valley Gorge brownfields redevelopment project in Richmond and the Wabash Landing brownfields redevelopment project in West Lafayette were among seven projects that were recognized as models of success by the Indiana Land Use Consortium (ILUC) at its November 2003 *Communities at the Crossroads VI* conference in Indianapolis. The seven initiatives were awarded from six categories relevant to land use planning: Partnership/Leadership, Stewardship, Economic Development, Community Sense of Place, Community Involvement, and Data and Technology. These projects demonstrated excellence in areas that are important to land use policy and reflect the principles that guide ILUC, which are:



**Q:** How can my community take advantage of U.S. Environmental Protection Agency brownfields grant funding?

**A:** Through the Small Business Liability Relief and Brownfields Revitalization Act, the U.S. EPA offers brownfields assessment, revolving loan fund, and cleanup grants to eligible entities to address brownfield sites with hazardous and/or petroleum contamination. The application process is nationally competitive and begins annually in late fall. For more information about eligibility requirements, the application process, and other U.S. EPA brownfields funding, please visit [www.epa.gov/brownfields](http://www.epa.gov/brownfields).





**Brownfields Bulletin** is published quarterly by the Indiana Department of Environmental Management (IDEM) to inform stakeholders, such as local government officials, business representatives, and interest groups about brownfields redevelopment initiatives and success stories from within and beyond the state. A brownfield site is a property that is abandoned, inactive or underutilized due to actual or potential environmental contamination. IDEM's overall mission is to make Indiana a cleaner, healthier place to live. IDEM's brownfields initiative helps communities overcome barriers for sustainable growth.

Please contact Dan Chesterson of the IDEM Brownfields Program to inform IDEM of address changes, to be added or deleted from the mailing list or e-mail list serve, or to share your comments and ideas about this publication.

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IDEM's toll-free number: (800) 451-6027, press 0 and ask for a person by name or number, or dial direct.

## Who Can Help

### Technical and educational assistance

#### Indiana Department of Environmental Management

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